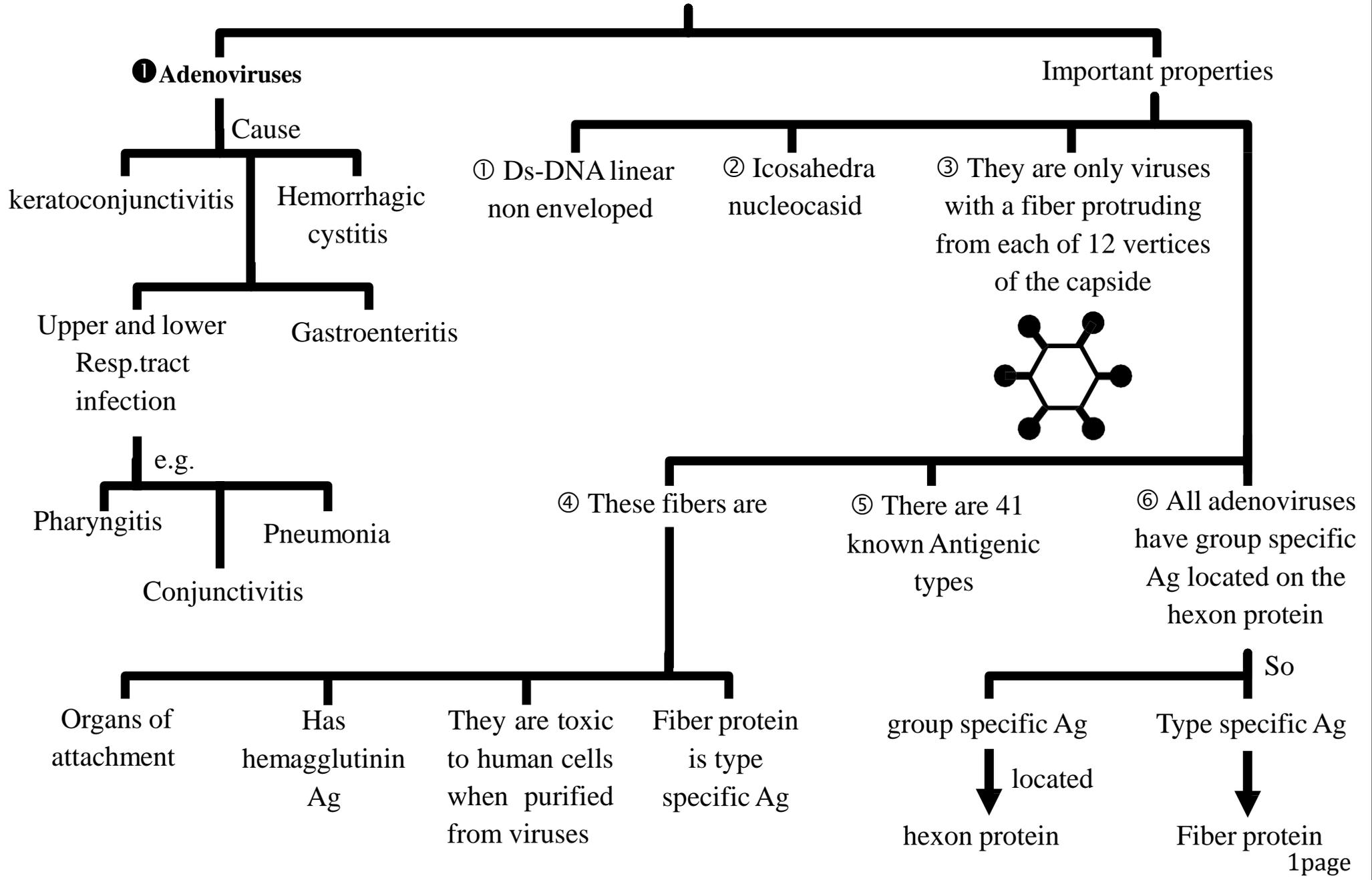
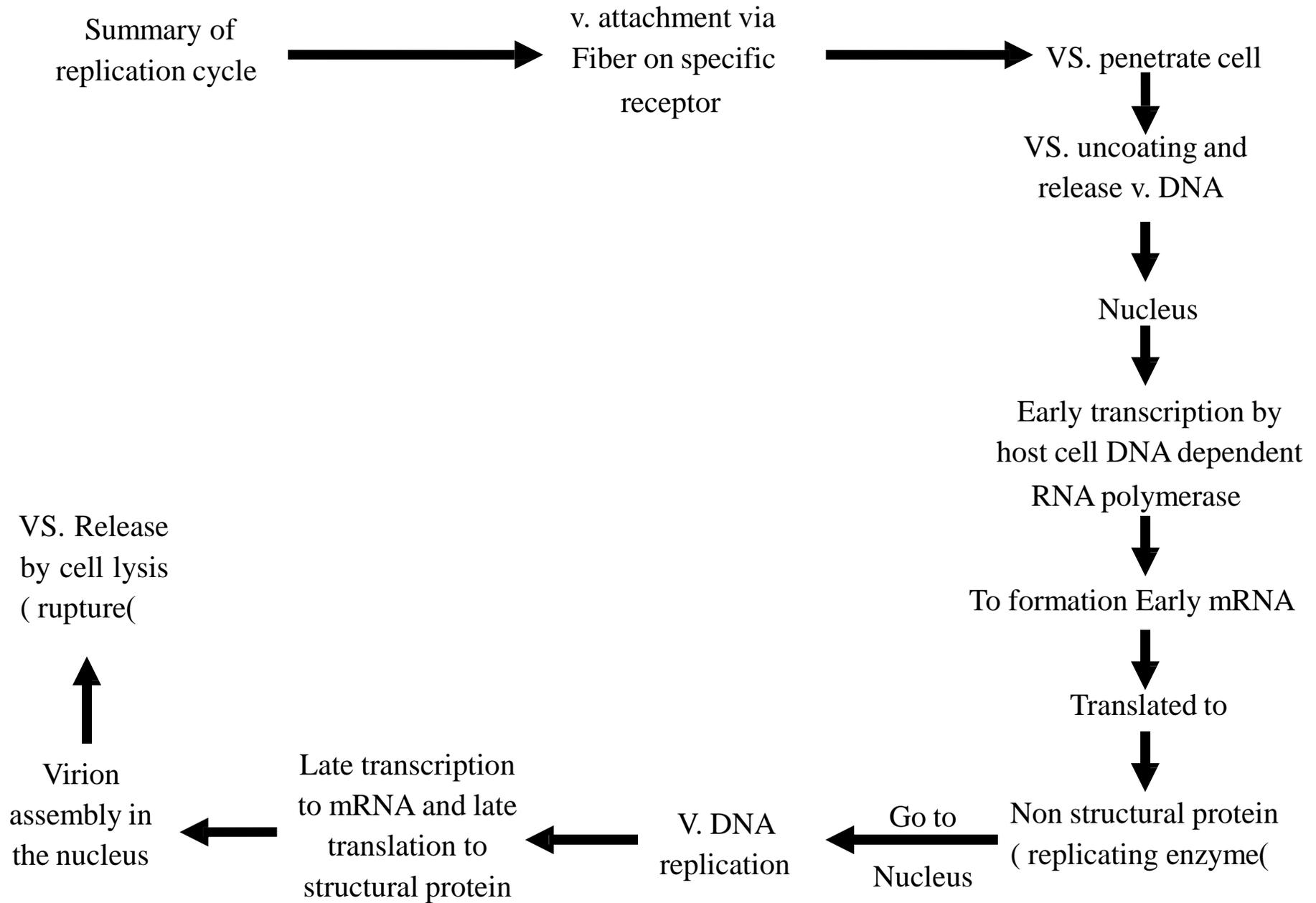
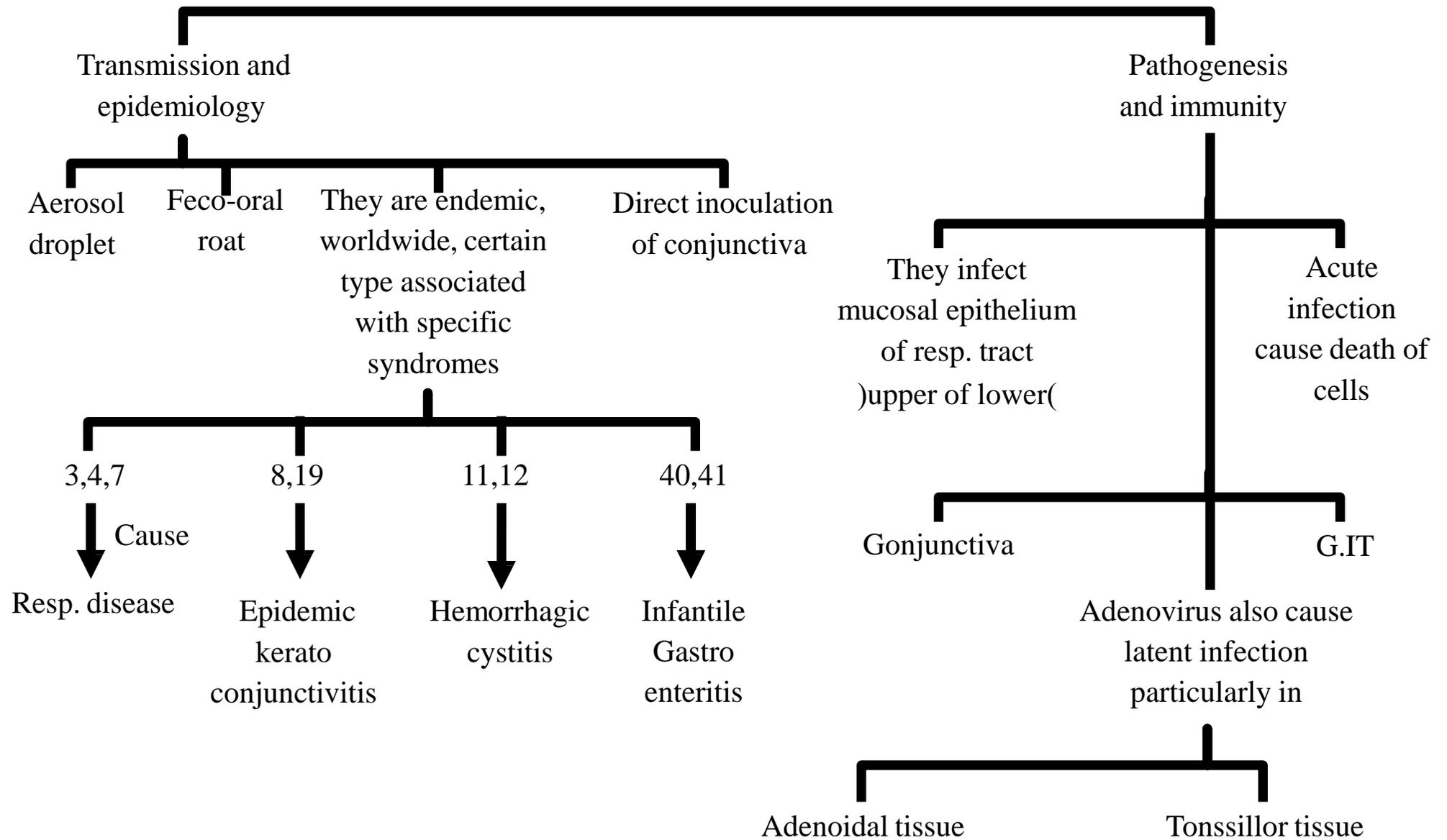


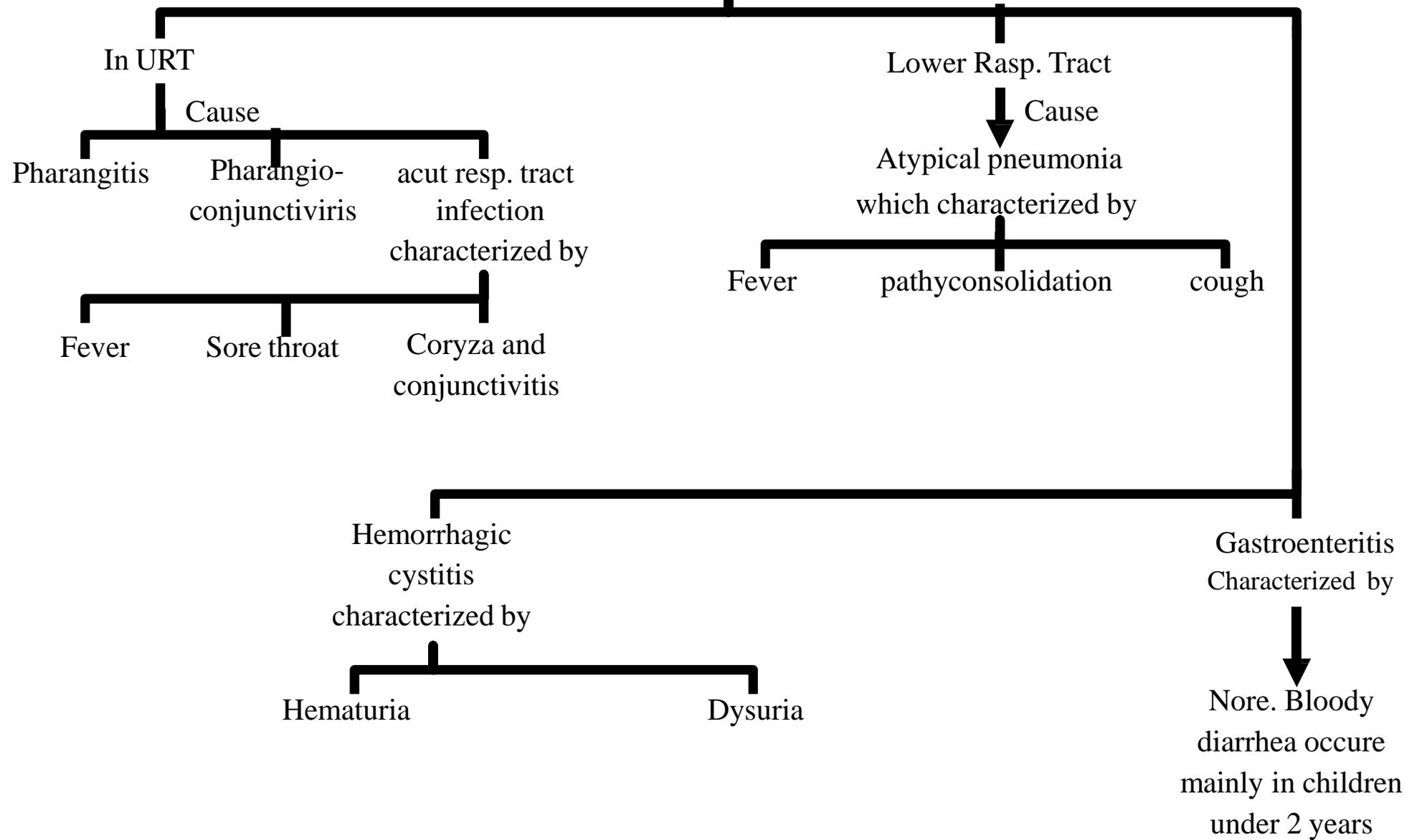
**Professor DR. Mothana Ali Khalil. Medical Virology**  
**DNA-Non-Enveloped Viruses**

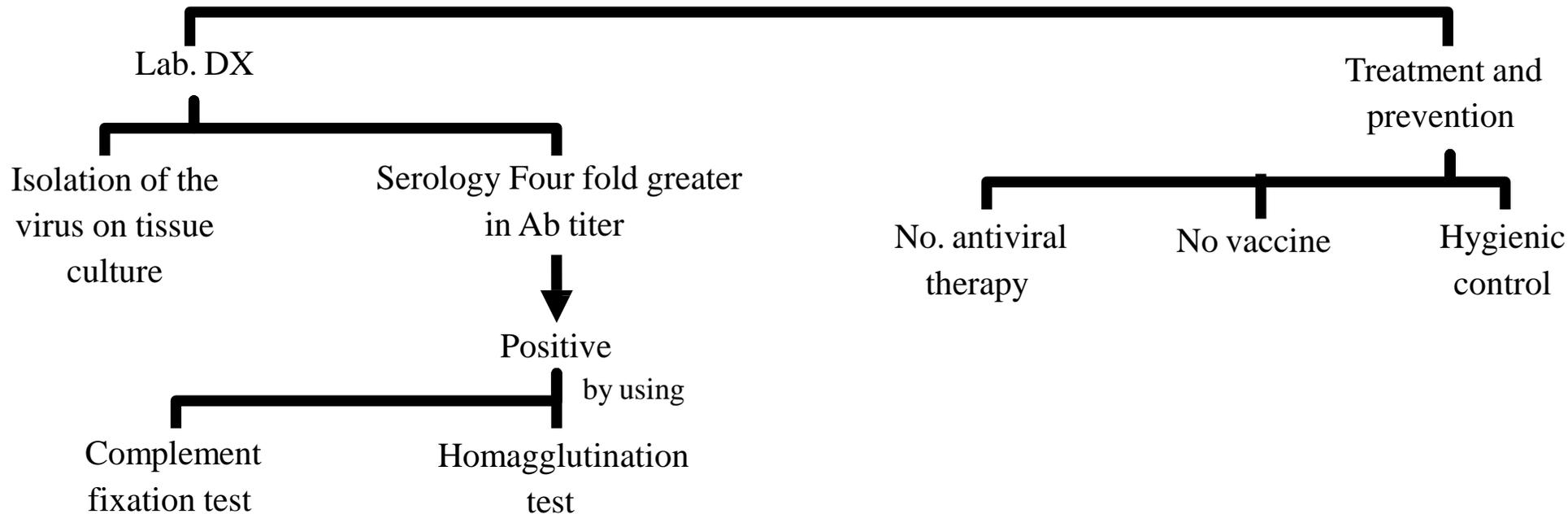




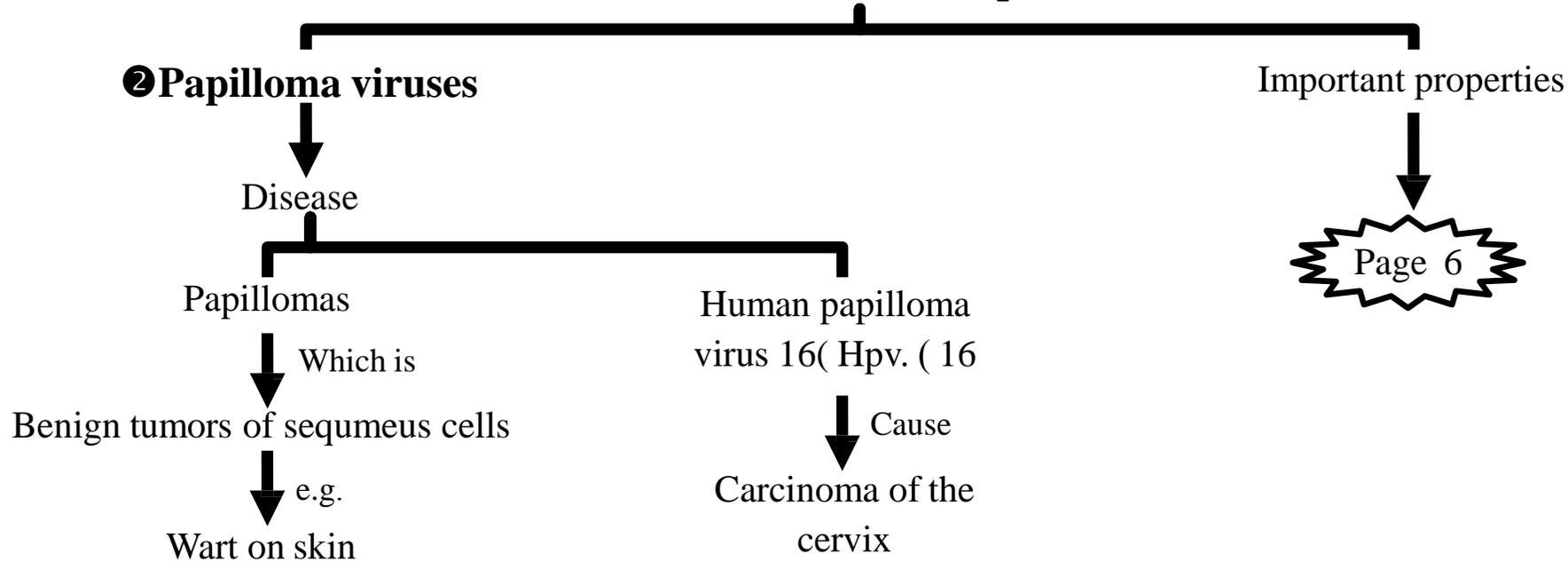


# Clinical finding of adenoviruses





**② Another DNA non enveloped viruses**



Important properties

DS-circular  
DNA

Non  
enveloped

icosahedral  
symmetry

There are at least  
60 types of  
HPVS

E. 6  
E. 7 [ Early]

Is early gene associated with  
carcinogenesis because they  
encoded proteins these protein  
bind to protein encoded by tumor  
suppressor genes in human cells  
e.g. P53 genes and retino-  
blastoma gene. .... so lead to  
cancer

There in noticeable  
connection of certain  
type to infect certain  
tissues

e.g.

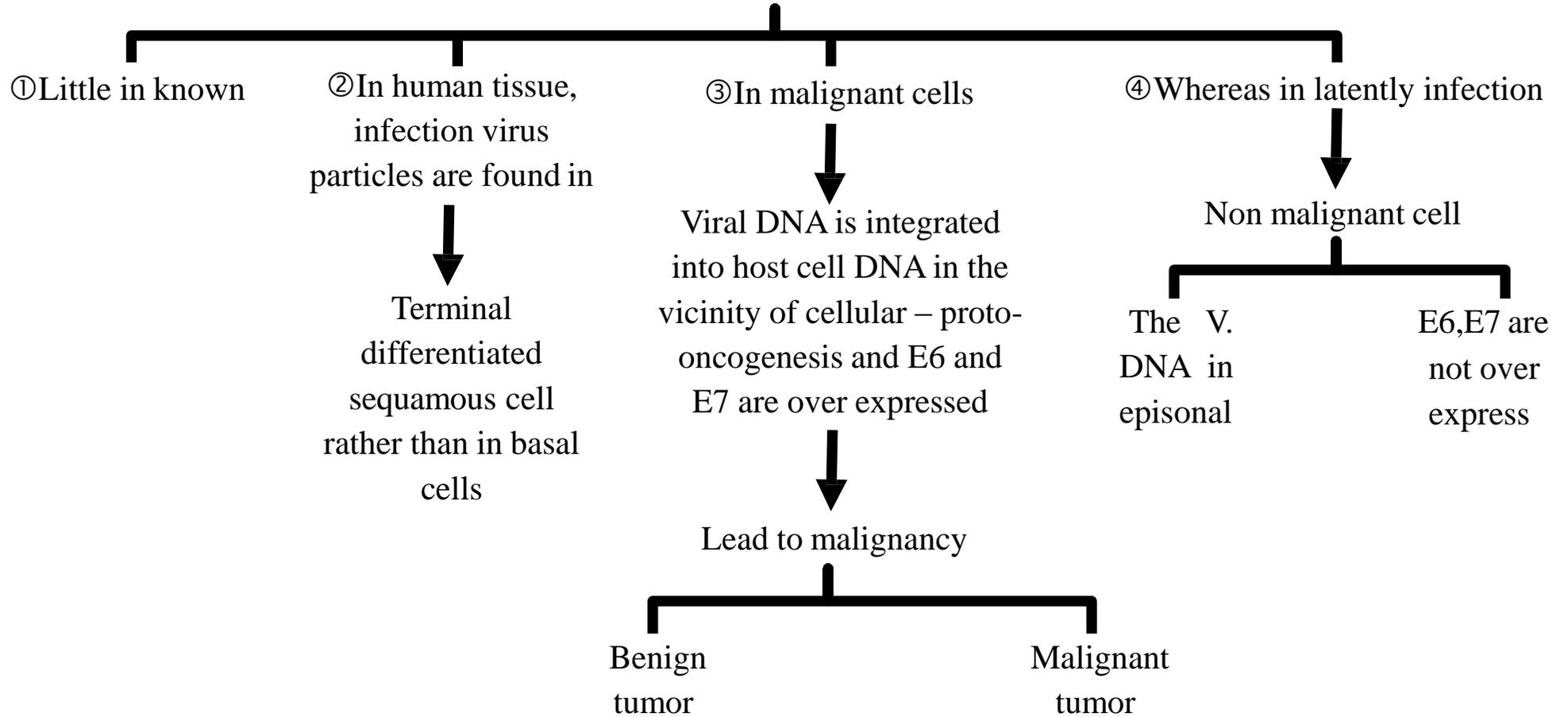
Skin wart

HPV-1-HPV-4

genital wart

HPV 6 – HPV- 11

## Summary of replication of HPV.



# Pathogenesis and immunity of HPV

HPV's infect squamous epith. Cell (S E C)

Produce

Characteristic vacuole called koilocytosis

Most warts are benign and do not progress to malignant

HPV infection associated with

Carcinoma of

Uterine cervix

Penis

The protein encoded by virus genes E6 and E7 interferes with growth inhibitory activity of the proteins encoded by tumor suppressor

↓ So

Contribute to oncogenesis by these viruses

Immunity

Both cell-mediated and humoral immunity induced by viral infection and involved in spontaneous regression of the wart

